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The Transportation Control Plan for the Baltimore metropolitan area sets forth the actions that will be taken by the region between now and 1987 to reduce the amount of air pollution caused by motor vehicles. The development and implementation of this plan is required by the Environmental Protection Agency (EPA) as a result of the 1977 Clean Air Act Amendments.

The plan contains control measures both for implementation and for study. Thirteen control measures and a public education campaign are to be implemented by 1982. At least twelve more control measures will be studied by the end of 1980 for possible inclusion in a more detailed and comprehensive transportation control plan to be completed in 1982.

Even after all measures now specified for implementation are fully applied, the region will still not achieve EPA's air quality standards by 1987. Ways to further reducing air pollution in the region will have to be found.

This volume is a summary of Volumes II-IV of the Transportation Control Plan. Detailed explanations of the measures listed and sources for the figures cited may be found in the three full-length volumes.

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TRANSPORTATION CONTROL PLAN

VOLUME 1: SUMMARY

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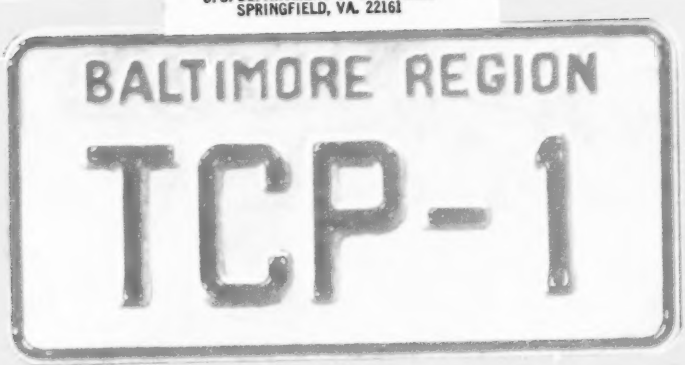

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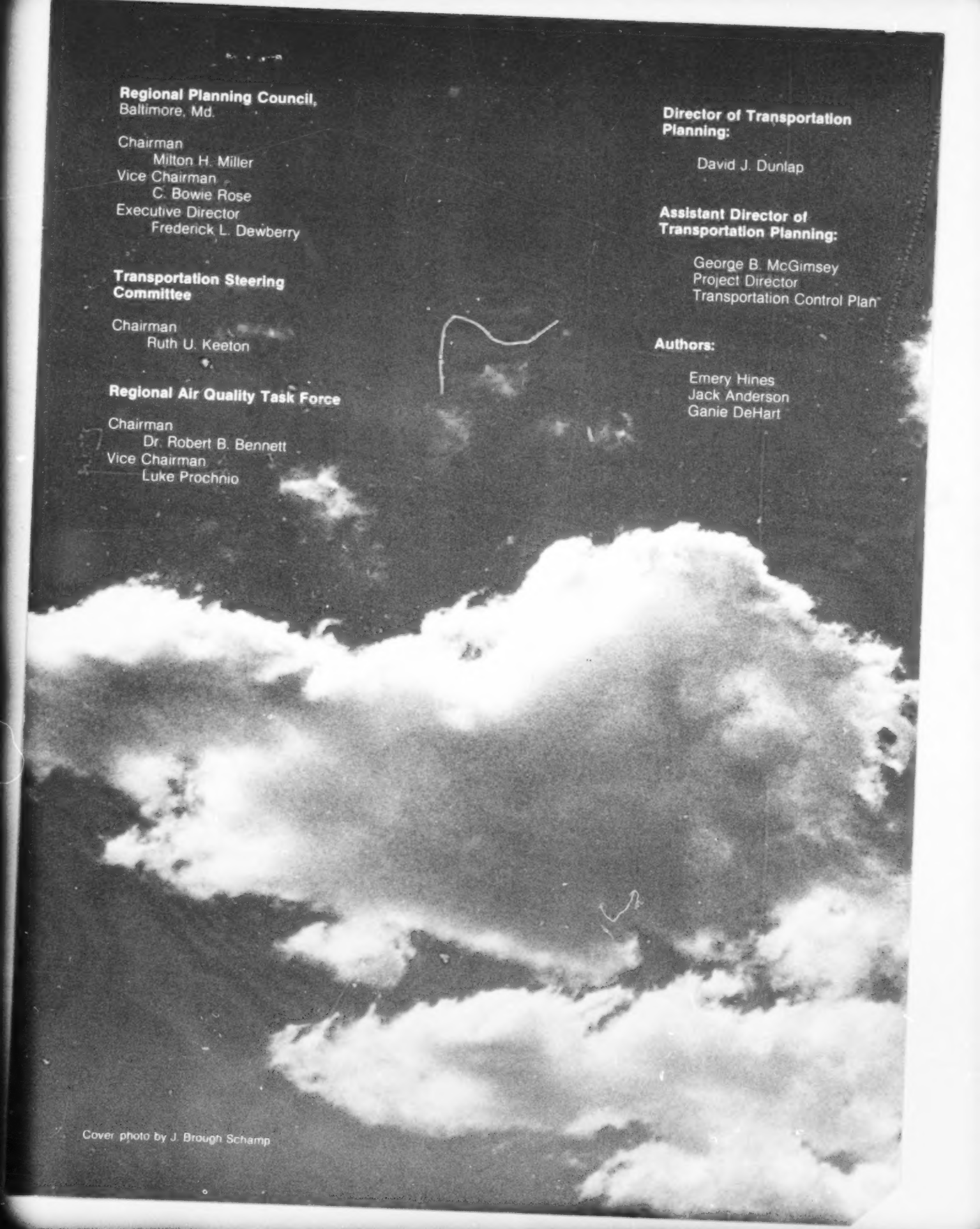

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TRANSPORTATION CONTROL PLAN

Volume 1: Summary

September 29, 1978

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Letter from the Chairman

September 29, 1978

The Honorable Blair Lee, III
Acting Governor of the State of Maryland
State House
Annapolis, Maryland 21404

Dear Governor Lee:

On September 22, 1978, the Regional Planning Council approved the Transportation Control Plan for the Baltimore Region. It is an initial step in reinforcing transportation control strategies that will help the state to meet the air quality standards set by the 1977 Clean Air Act Amendments. In addition, it represents the first phase of a regional effort to establish transportation policies that directly address the serious problem of air pollution, and thereby integrate air quality concerns into traditional transportation planning activities.

The preparation of the plan involved repeated discussions with local and state officials, and was guided by the Regional Air Quality Task Force, an advisory group made up of citizen, business, and governmental representatives. Task force participation in the evaluation of transportation control strategies has been extremely important, particularly in the identification of potential economic and social impacts.

Pursuant to your request of March 23, 1978, the Transportation Control Plan for the Baltimore Region is being transmitted to the Department of Health and Mental Hygiene by September 30 so that it can be integrated with the other elements of the State Implementation Plan. As much as possible, preparation of the plan has included coordination with the Metropolitan Washington Region in order to avoid inconsistencies in transportation control planning for the two regions.

The Regional Planning Council remains available and looks forward to a continued cooperative effort to solve the region's air quality problems.

Sincerely,

Milton H. Miller

Milton H. Miller
Chairman

This volume is a summary of Volumes II-IV of the Transportation Control Plan. Detailed explanations of the measures listed and sources for the figures cited may be found in the three full-length volumes.

Volume II describes the Baltimore Region's transportation control planning process and the control measures to be studied and implemented. Volume III contains technical documentation of emissions inventory and travel impact calculations, as well as the assumptions underlying the evaluation of the control measures. Volume IV consists of evidence of the state and local commitments required for implementation of the recommended measures.

Introduction

The Transportation Control Plan for the Baltimore metropolitan area sets forth the actions that will be taken by the region between now and 1987 to reduce the amount of air pollution caused by motor vehicles. The development and implementation of this plan is required by the Environmental Protection Agency (EPA) as a result of the 1977 Clean Air Act Amendments.

The plan contains control measures both for implementation and for study. Thirteen control measures and a public education campaign are to be implemented by 1982. At least twelve more control measures will be studied by the end of 1980 for possible inclusion in a more detailed and comprehensive transportation control plan to be completed in 1982.

Even after all measures now specified for implementation are fully applied, the region will still not achieve EPA's air quality standards by 1987. Ways of further reducing air pollution in the region will have to be found.

Measures for Implementation

The following measures are to be implemented by 1982:

Incentives for High Occupancy Vehicles

- park-and-ride lots
- improved rail transit
- carpooling
- vanpooling
- preferential parking for ridesharing vehicles
- bus service improvements

Measures for Cleaner Vehicles

- inspection and maintenance of motor vehicles

Measures to Reduce Congestion-Related Emissions

- traffic flow improvements
- on-street parking restrictions
- reduction of extended idling
- encouragement of bicycling

Measures to Reduce Automobile Use

- residential permit parking

Other Measures

- land use management
- public education campaign

Measures for Study

The following measures are to be studied before the end of 1980:

Incentives for High Occupancy Vehicles

- exclusive lanes for buses and ridesharing vehicles
- reduced transit fares

Measures for Cleaner Vehicles

- cleaner fleet vehicles
- retrofit of emission control devices
- cold start emission reduction programs

Measures to Reduce Congestion-Related Emissions

- staggered or flexible work hours
- encouragement of moped use

Measures to Reduce Automobile Use

- increased parking fees
- increased fuel taxes
- auto-free zones
- road tolls

Other Measures

- episodic vehicle controls

The Problem

Present Air Quality

Air pollution is composed of several classes of chemicals, including hydrocarbons, carbon monoxide, and nitrogen oxides. The Transportation Control Plan deals primarily with hydrocarbons, which react with sunlight to produce photochemical oxidants, commonly known as smog. Carbon monoxide and nitrogen oxide are also considered, but the effectiveness of the plan is measured mainly in reductions in hydrocarbon emissions.

On a typical July Friday in 1977, an estimated 59.5 metric tons of hydrocarbons were produced in the Baltimore Region during the morning rush hours (6-9 a.m.) Of the total, 45.1 metric tons came from highway motor vehicles; the remainder was generated by stationary sources and non-highway vehicles, such as trains, planes, and boats. Morning rush hour figures are used because the hydrocarbons produced during those hours contribute the most to smog formation, since they are exposed to sunlight for the longest period.

The EPA has established national ambient air quality standards for photochemical oxidants and carbon monoxide. For the region to achieve the standards for photochemical oxidants, the Bureau of Air Quality Control estimates that it will be necessary to reduce daily morning rush hour hydrocarbon emissions by 73% (43.4 metric tons), to 16.1 metric tons.

The necessary reduction in hydrocarbons cannot be achieved by any one measure or by reducing pollution from any one source. Instead, several sources of reduction must be combined to produce the required effect.

Reductions from Stationary Sources

In 1977, 14.4 of the total 59.5 metric tons of morning hydrocarbon emissions were produced by stationary sources and non-highway vehicles. Adding reasonably available control measures to existing regulations will reduce stationary source hydrocarbon emissions by 5.3 metric tons by 1987.

It is unlikely that stationary source emissions can be reduced beyond that amount. The remaining 38.1 metric ton reduction needed to achieve the EPA standard will have to come from controls on mobile sources of pollution.

Reductions from Cleaner Vehicles

The Federal Motor Vehicle Control Program, which requires increasingly strict emissions controls on new automobiles, will reduce morning rush hour hydrocarbon emissions in the region significantly, in spite of projected increases in vehicle miles of travel (VMT). By 1987, the reduction from 1977 levels is expected to amount to 26.6 metric tons. A further reduction of 11.5 metric tons will still be needed from regional control measures if the EPA standard is to be achieved.

A state program for pollution-related inspection and maintenance of vehicles would further decrease emissions. If the program were to start in 1981, morning hydrocarbon levels would be reduced by 5.6 metric tons in 1987, leaving 5.9 metric tons of hydrocarbons to be eliminated by other measures.

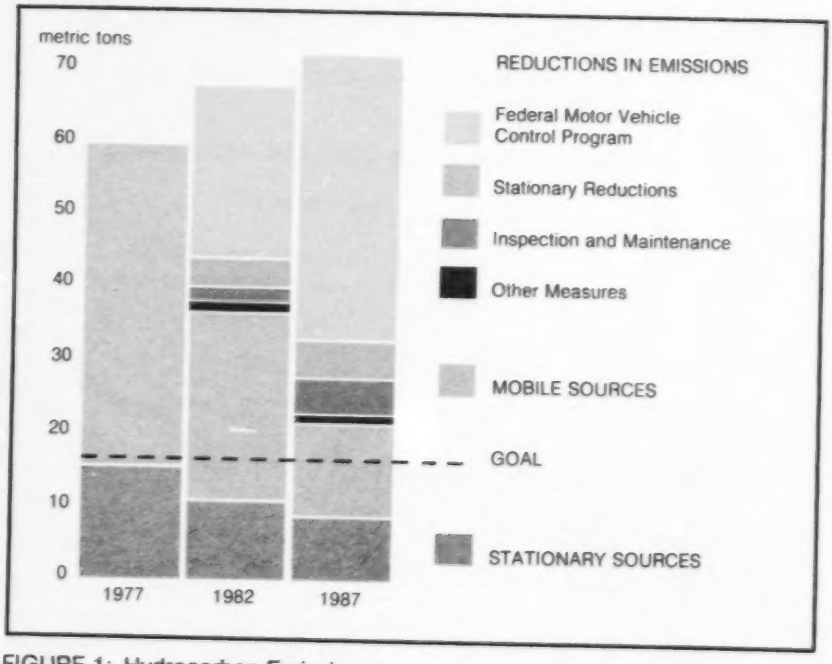


FIGURE 1: Hydrocarbon Emissions
Morning Peak Period (6-9 a.m.) on a Friday in July.

Reductions from Other Measures

The other twelve control measures recommended for implementation in the Transportation Control Plan would reduce morning rush hour hydrocarbon emissions by only 0.8 metric ton in 1987. As a result, *the region's hydrocarbon emissions would still be 5.1 metric tons above the level needed to achieve EPA's photochemical oxidant standard, after all presently planned measures were implemented.*

Figure 1 presents a summary of the reductions in hydrocarbon emissions expected as a result of stationary source reductions, the Federal Motor Vehicle Control Program, a regional vehicle inspection and maintenance (I/M) program, and other mobile source control measures.

Implications for Planning

If the Baltimore Region is to achieve EPA's air quality standard for photochemical oxidants by 1987, additional control measures will be needed. It seems likely that the additional measures will have to concentrate on reducing the amount of motor vehicle travel, rather than on producing cleaner vehicles or reducing pollution from stationary sources.

The Federal Motor Vehicle Control Program and a regional inspection and maintenance program will practically exhaust the immediate possibilities for reducing emissions from individual vehicles. Programs for cleaner fleet vehicles and fuels, retrofit of emission control devices, and reduction of cold start emissions will be studied for future applicability.

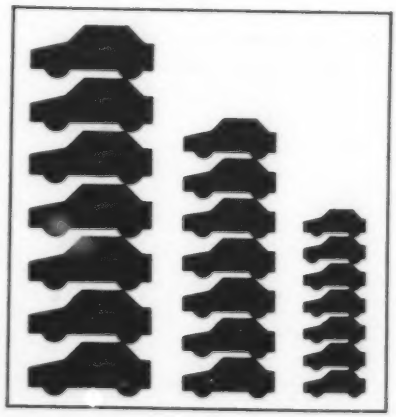
In any case, if the amount of travel continues to increase indefinitely, the benefits of measures to produce cleaner vehicles could be wiped out. To a certain point, the cleaner vehicles resulting from those measures will offset increases in travel. As soon as the ultimate pollution standards for individual vehicles have been achieved, however, continued increases in travel will result in deteriorating air quality, as illustrated in Figure 2.

The 5.1 excess tons of hydrocarbons remaining after all presently planned measures are implemented may seem relatively insignificant. However, they represent an amount over six times greater than the reduction expected by 1987 as a result of presently planned measures for reducing travel.

Furthermore, they amount to 42% of the total hydrocarbon emissions from mobile sources projected by 1987. If a direct relationship between vehicle miles of travel (VMT) and weight of emissions is assumed, then a 42% reduction in projected 1987 VMT would be needed to eliminate the 5.1 excess tons of hydrocarbons.

Achieving such a large reduction in VMT will not be easy and may not be possible. The measures presently recommended for study may provide some reductions. Some measures not yet under study may have to be found. The measures already recommended for implementation must be examined to see if more aggressive programs with greater effects on travel levels can be developed.

In any case, no one measure can achieve such a large VMT reduction. It will be necessary to use a number of measures, each with small individual effects.



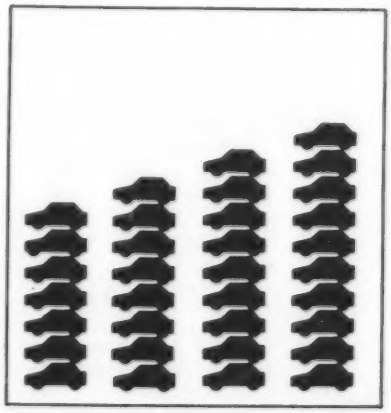


FIGURE 2:
Cleaner vehicles reduce emissions. More travel increases emissions.

Measures for Implementation

In the following pages, the control measures selected for implementation are briefly described and the actions that have been programmed for each measure are listed.

Thirteen control measures have been chosen for implementation by 1982. In some cases, implementation will begin before 1982 but will not be completed until later.

A public education campaign is also to be implemented. In addition to increasing general awareness of air quality issues, it will also promote public acceptance of specific air quality control measures.

Control measures other than those selected for implementation were considered. Twelve measures were recommended for further study. One measure, gasoline rationing, was rejected completely.

Park-and-Ride Lots

Park-and-ride lots provide free parking for commuters who transfer from their private automobiles to express buses, vanpools, or carpools. There are currently eight park-and-ride lots in operation in the Baltimore metropolitan area, with a total of nearly 1600 spaces.

Between now and 1982, the Maryland Department of Transportation (MDOT) will construct at least 300 new park-and-ride spaces per year, at an annual cost of about $350,000. A total of twenty-two lots are currently programmed or under construction, while seventeen additional lots are being studied for future implementation. Park-and-ride lots already in existence or under consideration are shown in Figure 3.

FIGURE 3: Park-and-Ride Lots in the Baltimore Region.

● Existing
▲ Programmed
■ Under Study

Improved Rail Transit

Improved rail transit involves expanding the capacity and improving the services provided by public transit and commuter railroads. A variety of programs to improve rail transit are underway in the Baltimore Region. The programs range from rapid transit construction to minor operational adjustments.

Between now and 1982, MDOT will:

- construct a rapid rail transit line from downtown to Reisterstown Road Plaza;
- continue to study construction of a rail transit line from downtown to Cockeysville, with service to Towson;
- apply for Federal funding for final design of a rapid rail transit line from Reisterstown Road Plaza to Owings Mills;
- continue to improve commuter railroad service between Baltimore and Washington, D.C.;
- study improved commuter railroad service from Odenton and Havre de Grace to Baltimore.

Baltimore City will:

- study the feasibility of a Downtown People Mover.

Carpooling

Carpools are automobiles that carry more than one commuter. The region's carpool promotion program, COMPUTERIDE, has been in existence since 1974.

Between now and 1982, COMPUTERIDE will attempt to establish 1,500 new carpools annually by:

- developing increased public awareness of the COMPUTERIDE program;
- developing employer incentives for carpooling;
- increasing the extent and effectiveness of its survey and carpool matching programs.

Figures 4-6 show major employers participating in the regional ridesharing program.

Vanpooling

A vanpool is any van that carries between eight and fifteen commuters. VANGO, a nonprofit organization established in 1977 to help potential vanpoolers, has started a leasing program that reduces the financial risks of forming vanpools.

Between now and 1982, VANGO will attempt to establish 50-100 new vanpools annually statewide, with emphasis in the Baltimore and Washington metropolitan areas. In pursuit of this goal, VANGO will work on:

- increasing public awareness of vanpooling;
- reducing the relative cost of vanpool operations;
- developing employer provisions for vanpooling incentives.

Preferential Parking for Ridesharing

Preferential parking for car- and vanpools encourages ridesharing by reserving parking spaces or reducing parking rates for poolers. Baltimore City currently operates five preferential carpool parking lots downtown. Several large employers also provide preferred parking spaces to car- and vanpoolers.

To further increase preferred parking for ridesharing, the following actions will be taken by 1982:

- COMPUTERIDE and VANGO will encourage all large employers to provide preferred parking for car- and vanpools;
- Baltimore City will continue its preferential parking program for car- and vanpools in its downtown temporary metered lots.

FIGURE 4: Suburban Employers in the Ridesharing Program.

FIGURE 5: Baltimore City Employers in the Ridesharing Program.

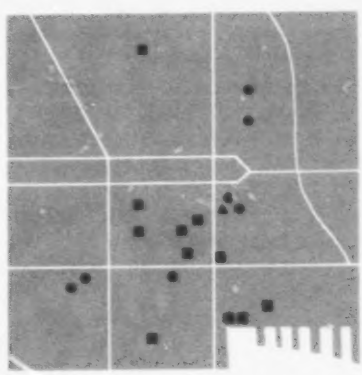


FIGURE 6: Downtown Employers in the Ridesharing Program.

Bus Service Improvements

Bus service improvements involve increasing the number and frequency of buses, extending transit service to new communities, and making other operational improvements.

Between now and 1982, MDOT will:

- Begin rapid transit feeder bus service;
- Provide express bus service to new park-and-ride lots;
- Continue Annapolis-Baltimore express bus service;
- Continue scheduling and other operational improvements;
- With Baltimore City, complete study of obstacles to bus schedule reliability;
- With RPC and Harford County, prepare multi-modal transportation plan for Harford County.

The various local jurisdictions will:

- Continue to operate Annapolis transit system;
- Study feasibility of traffic signal pre-emption system for buses in Baltimore City;
- Study transportation improvements consistent with Anne Arundel County Master Plan;
- Improve local bus service in Columbia-Ellicott City area and study feeder bus service for rail commuters and demand-responsive transit service.

Motor Vehicle Inspection and Maintenance

Motor vehicle inspection and maintenance is a program requiring that vehicles weighing 8,500 pounds or less be inspected periodically to ensure that they are properly tuned, have operational anti-pollution devices, and are producing acceptable levels of emissions.

It is recommended that an inspection and maintenance program containing the following elements be presented to the Maryland General Assembly in 1979:

- start-up no later than 1982;
- begin with one year mandatory inspection and voluntary maintenance program*;
- allowable emissions levels to be set by the state;
- reasonable fee set for inspection;
- inspection by contractor selected by state;
- monitoring of inspection stations by the state;
- stations to be easily accessible to the public;
- consideration of a future program for heavy duty vehicles;
- waiver provision for twice-failed vehicles;
- mechanics' education program;
- provision for outside evaluation;
- sunset clause.

*assumed in projections to begin in 1981.

Traffic Flow Improvements

Traffic flow improvements rely upon various traffic engineering techniques to increase intersection and street capacities. Traffic flow improvements include turning lanes, signalization, and redesigned intersections.

By 1982, the local jurisdictions and MDOT will implement the various traffic flow improvements contained in the Baltimore Region's Transportation Improvement Program (TIP), including:

- traffic monitoring and motorist information systems on certain Interstate highways;
- improved coordination of traffic signals in Baltimore City and Anne Arundel and Baltimore Counties;
- other traffic engineering, channelization, and intersection improvements.

On-Street Parking Restrictions

On-street parking restrictions refer to a number of measures that either restrict or eliminate curb-side parking. Implementation of the measure increases the through capacity of a street and allows vehicles to move faster. This strategy is widely used in existing activity centers during peak periods.

Between now and 1982, the local jurisdictions and MDOT will continue their programs of on-street parking restrictions.

Reduction of Extended Idling

The air pollution associated with idling of motor vehicles can be reduced through public education, changes in laws, or traffic engineering. The recently enacted legislation permitting right turns on red will result in less idling at intersections.

Before 1982, RPC will sponsor a public awareness campaign in cooperation with state and local agencies to discourage idling of motor vehicles during waiting periods.

Encouragement of Bicycling

Bicycles are a non-polluting transportation alternative that can be used for many work trips and other utility trips, as well as for recreation.

Between now and 1982, MDOT and the local jurisdictions will:

- develop programs for actively promoting bicycle use for short trips, particularly commuting;
- continue or consider providing basic bicycle-related roadway improvements (i.e., bike safe storm grates, wide curb lanes, paved shoulders);
- cooperate with RPC in conducting a pilot bicycle parking project through the Regional Bikeways Study;
- consider establishing or expanding cyclist and motorist education programs;
- select bikeways identified as priority routes in the regional bikeways plan for designation or construction.

Baltimore County will:

- install bicycle parking facilities at selected sites.

Residential Permit Parking

A residential permit parking system discourages commuting by automobile by eliminating free commuter parking in selected areas. Under such a system, only vehicles with valid parking stickers or visitor's passes are allowed to park in the affected neighborhoods during the work day. A pilot residential permit parking program was recently put into effect in the Oakenshawe section of Baltimore City.

In the near future, the Baltimore City Council will consider a bill making possible a residential permit parking system in neighborhoods requesting it.

Land Use Management

Land use measures that reduce the random scattered spread of urban development into the countryside have the effect of reducing travel associated with new growth. Alternatively, growth which takes place in sequence with the orderly expansion of urban services can be more easily served by transit.

Several local jurisdictions and the State have developed programs that work toward these goals. They will affect the location of growth, but not the overall level of economic growth in the region.

The land use management programs to be implemented by 1982 include:

- Baltimore County Interim Development Control Act;
- Anne Arundel County Growth Management Program;
- Carroll County Agricultural Zoning District;
- State of Maryland Agricultural Land Preservation Program.

Public Education Campaign

An intensive public education campaign will promote awareness of the regional air quality problem, an understanding of the health effects of air pollution, and an acceptance of transportation alternatives that can help clean up the air.

Between now and 1982, RPC and state, local, and private agencies will carry out a public education program designed to:

- encourage more vigorous promotion of control measures that have a positive impact on air quality;
- encourage more efficient and widespread distribution of information;
- establish coordinated promotional efforts among the agencies interested in air quality.

Most Effective Measures

The most effective measures for reducing the region's auto-related emissions burden are inspection and maintenance, an aggressive regional ridesharing program, and land use management. An inspection and maintenance program is by far the most effective measure, although its full effects would not be felt until 1987.

Assuming that mandatory inspection and voluntary maintenance begin in 1981, an automobile inspection and maintenance program could reduce morning rush hour hydrocarbon emissions by 1.9 metric tons in 1982 and by 5.6 metric tons in 1987. Such a program is not likely to be approved until the end of the 1979 session of the Maryland General Assembly.

The effects of an aggressive ridesharing program and land use management would be of a considerably lower magnitude than those of inspection and maintenance. A ridesharing program that annually starts 1500 new carpools in the region and 50-100 new vanpools statewide could reduce morning rush hour hydrocarbon emissions by .4 metric ton in 1982 and by .3 metric ton in 1987. Land use management could bring reductions of about .3 metric ton in both 1982 and 1987.

Non-Air Quality Benefits

Programs for improving air quality are often seen as programs requiring great sacrifices in other areas for the sake of reduced pollution. In the process of improving air quality, however, the Transportation Control Plan will also produce benefits in other areas.

Because many of the measures specified in the plan will reduce travel, they will result in energy savings as well as pollution reduction. Figure 7 illustrates the annual savings in gasoline expected as a result of the plan.

Besides improving air quality, the plan would contribute to a general improvement in the region's environment. Congestion levels and noise levels would be reduced. The land use measures would help reduce farmland and forestry losses and assure an adequate level of public services. Improved air quality would mean an improvement in the health level of residents of the region and less deterioration of buildings and vegetation. The overall result would be improved quality of life for the region's residents.

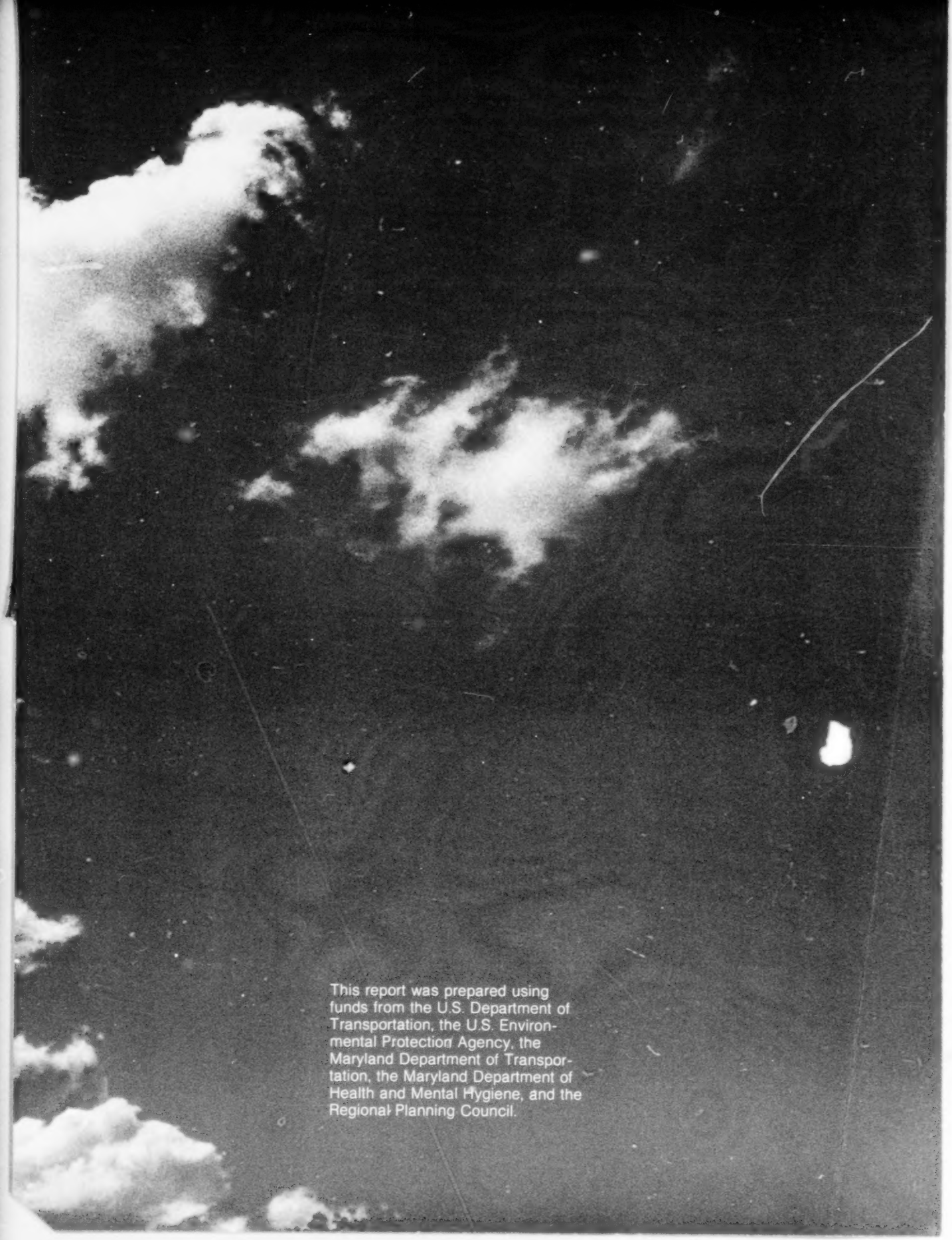
Million Gallons Saved Annually	1982	1987
Inspection and Maintenance	13.2	12.6
Other State and Local Measures	8.5	16.8
TOTAL	21.7	29.4

FIGURE 7: Gasoline Savings Expected from the TCP.

Summary Table

	Commitments and Studies
Park-and-Ride Lots	Construct at least 300 new park-and-ride spaces per year
Improved Rail Transit	Construct rapid transit line from downtown to Reisterstown Rd. Plaza Study rail transit line from downtown to Cockeysville Apply for design funds for rapid transit line from Reisterstown Road Plaza to Owings Mills Improve commuter railroad service
Carpooling	Increased public awareness Employer incentives Increased survey and matching efforts
Vanpooling	Increased public awareness Reduce costs Employer incentives
Preferential Parking for Ridesharing	Employer provision of preferred parking for car- and vanpools Continue City preferential parking program on downtown lots
Bus Service Improvements	Feeder bus for rapid transit Express buses to new Park-and-Ride lots Annapolis-Baltimore express bus Scheduling improvements Assorted local jurisdiction improvements
Inspection and Maintenance	Establish motor vehicle I/M program by 1982
Traffic Flow Improvements	Implement traffic flow improvements in TIP
On-Street Parking Restrictions	Continue ongoing programs
Reduction of Extended Idling	Right turn on red in effect since July 1978 Promote public awareness
Encouragement of Bicycling	Develop programs to promote bicycle use Continue/consider basic roadway improvements for bicycles Baltimore County and regional parking facilities projects Consider cyclist and motorist education programs New bikeways
Residential Permit Parking	Consider Baltimore City permit parking system
Land Use Management	Baltimore County Interim Development Control Act Anne Arundel County Growth Management Program Carroll County Agricultural Zoning District State of Maryland Agricultural Land Preservation Program
Public Education Campaign	Promotion of transportation controls Wider distribution of information Coordinated promotional efforts

Costs through 1987		Responsibility	RAQTF ranking	Metric tons of HC reduction	
Total Costs	Source of Funds			1982	1987
$14,000,000	FHWA, UMTA	SHA, MTA, Local Jurisdictions	1	0.10	0.07
$918,850,000	UMTA, MDOT	MTA	4	0.12	0.11
$1,800,000	FHWA, MDOT	VANGO, COMPUTERIDE	9	0.32	0.23
$900,000	COMPUTERIDE	Large Employers	8	0.05	0.04
Not estimated	FHWA, Baltimore City, Employers	Baltimore City, Employers, COMPUTERIDE, VANGO	7	Not estimated	Not estimated
Not estimated	UMTA, MDOT	MTA, Local Jurisdictions	3	0.03	0.01
Supported by inspection fees	Motor vehicle owners	State	6	1.95	5.59
$75,800,000	FHWA, MDOT	Local Jurisdictions	10	Not estimated	Not estimated
Not estimated	FHWA, MDOT	Local Jurisdictions	19	Not estimated	Not estimated
Not estimated	EPA	State, RPC, Local Jurisdictions	2	0.09	0.04
Not estimated	FHWA, MDOT, Local Jurisdictions	SHA, Local Jurisdictions	16	0.05	0.04
Not estimated	Baltimore City	Baltimore City	18	Not estimated	Not estimated
Not estimated	State, Local Jurisdictions	State, Local Jurisdictions	15	0.31	0.25
To be estimated	EPA, FHWA, UMTA, DOE	MDOT, DHMH, RPC, Local Jurisdictions	Not rated	Impact included in other measures	



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